

## **BEEM spectroscopy and imaging of metal/GaN interfaces\***

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The utilization of GaN in devices requires an understanding and characterization of Schottky contacts to this material. Ballistic-electron-emission microscopy (BEEM) is a recently developed STM method for probing interfaces with nanometer resolution. A strong advantage of BEEM is the capability to isolate individual nanometer-scale areas for analysis and probe local Schottky barrier height. BEEM measurements have been performed on Au/GaN and Pd/GaN. An average Au/GaN Schottky barrier height of 1.04 eV has been measured by BEEM spectroscopy, compared with a value measured by I-V of  $\sim 0.8 - 1.0$  eV. The large variation in barrier heights measured by I-V is an indication of heterogeneity, directly probed by BEEM imaging of this interface. Images show electron transmission in most areas, but the intensity varies strongly. Characterization of other GaN material reveals no measurable BEEM current, although high-quality, low-leakage Schottky contacts can still be formed. The possibilities for this result will be discussed.

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